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PHYSICAL FITNESS AND INCIDENT HYPERTENSION: THE FIT PROJECT

Oral Contributions
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Background: Increased physical fitness plays a role in cardiovascular disease prevention. We hypothesized that increased fitness would be inversely associated with incident hypertension (HTN).

Methods: We examined the association of fitness with incident HTN in 22,109 participants from The FIT (Henry Ford Exercise Testing) Project (1991-2009) with no diagnosed HTN at baseline. Fitness level was expressed as estimated METS achieved during a treadmill stress test. Incident HTN was defined as a new diagnosis of HTN on three separate encounters in electronic medical records or claims data. Analyses were performed with Cox proportional hazards models and were adjusted for HTN risk factors.

Results: The mean age was 49 yr and the mean METs achieved was 10.3. The population was 46% women and 20% black. During a median follow-up period of 4.4 years (IQR: 2.2 to 7.7 years), there were 8,053 new HTN cases. The unadjusted 10-year cumulative incidences across categories of METs (12) were 70, 62, 50, and 37 per 100 person-years. After adjustment for HTN risk factors, including resting systolic and diastolic blood pressure, participants achieving > 12 METs had a 20% lower risk of incident HTN compared to participants achieving < 6 METs (HR: 0.80; 95% CI: 0.73, 0.89; P-trend < 0.001) (Figure).

Conclusions: Fitness is an independent risk factor for incident HTN. Additional research is needed to delineate the specific biologic pathways by which increased fitness level might decrease risk of incident HTN.

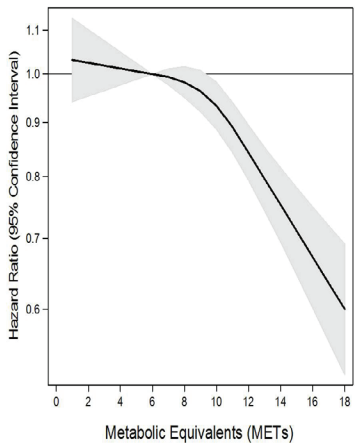

Figure. Adjusted hazard ratios (solid line) for incident hypertension during follow-up according to baseline measured estimated METs. Hazard ratios were determined from a restricted cubic spline model and are shown on a natural log scale. Shaded region represents the 95% confidence intervals. This model was expressed relative to the < 6 METs category with knots specified at 6, 10, and 12 METs. Model was adjusted for age, sex, race, history of diabetes, history of hyperlipidemia, lipid-lowering medication use, history of obesity, family history of coronary heart disease, current smoking status, pulmonary medication use, indication for stress testing, resting systolic blood pressure, and resting diastolic blood pressure.